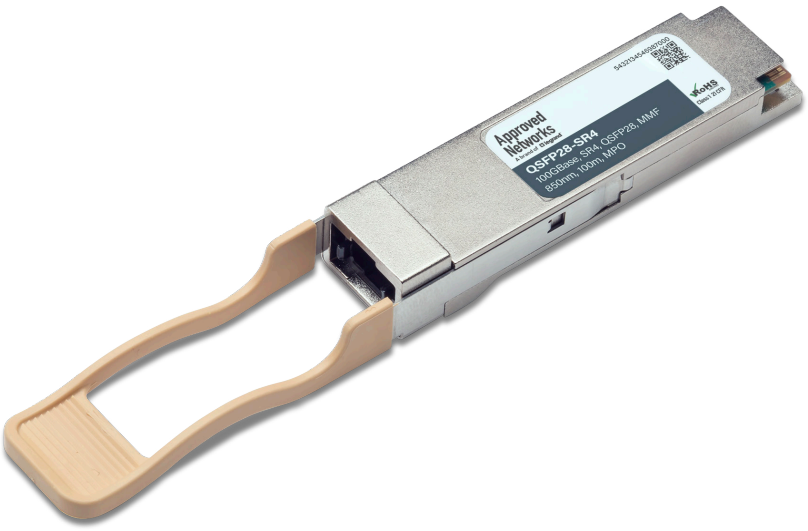


Features

- 4 independent full-duplex channels
- Up to 28Gb/s data rate per channel
- QSFP28 MSA compliant
- Up to 100m OM4 MMF transmission
- Operating case temperature: 0 to 70˚C
- Compliant to IEEE 802.3bm 100GBASE-SR4
- Single 3.3V power supply
- Maximum power consumption 3.5W
- MTP/MPO optical connector
- RoHS-6 compliant

Applications

- Rack to Rack
- Data Center
- Infiniband QDR, DDR and SDR
- 100G Ethernet

1. Absolute Maximum Ratings

It has to be noted that the operation in excess of any absolute maximum ratings might cause permanent damage to this module.

Parameter	Symbol	Min	Max	Units	Notes
Storage Temperature	TS	-40	85	ºC	
Operating Case Temperature	TOP	0	70	ºC	
Power Supply Voltage	VCC	-0.5	3.6	V	
Relative Humidity (non-condensation)	RH	0	85	%	
Damage Threshold, each Lane	THd	3.4		dBm	

2. Recommended Operating Conditions and Power Supply Requirements

Parameter	Symbol	Min	Typical	Max	Units
Operating Case Temperature	TOP	0		70	ºC
Power Supply Voltage	VCC	3.135	3.3	3.465	V
Data Rate, each Lane			25.78125		Gb/s

Control Input Voltage High		2		Vcc	V
Control Input Voltage Low		0		0.8	V
Link Distance (OM3 MMF)	D1			70	M
Link Distance (OM4 MMF)	D2			100	M

3. Electrical Characteristics

The following electrical characteristics are defined over the Recommended Operating Environment unless otherwise specified.

Parameter	Symbol	Min	Typ	Max	Units	Notes
Power Consumption				3.5	W	
Supply Current	Icc			1060	mA	
Transceiver Power-on Initialization Time				2000	ms	1
Transmitter (Each lane)						
Single-ended Input Voltage Tolerance		-0.3		4.0	V	2
AC Common Mode Input Voltage Tolerance		15			mV	RMS
Differential Input Voltage Swing Threshold		50			mVpp	LOSA Threshold
Parameter	**Symbol**	**Min**	**Typ**	**Max**	**Units**	**Notes**
Transmitter (Each lane)						
Differential Input Voltage Swing	Vin,pp	180		1000	mVpp	
Differential Input Impedance	Zin	90	100	110	Ohm	
Total Jitter				0.40	UI	
Deterministic Jitter				0.15	UI	
Receiver (Each lane)						
Single-ended Output Voltage		-0.3		4.0	V	
AC Common Mode Output Voltage				7.5	mV	RMS
Differential Output Voltage Swing	Vout,pp	300		850	mVpp	
Differential Output Impedance	Zout	90	100	110	Ohm	
Total Jitter				0.3	UI	
Deterministic Jitter				0.3	UI	

Notes:

1. Power-on Initialization Time is the time from when the power supply voltages reach and remain above the minimum recommended operating supply voltages to the time when the module is fully functional.
2. The single ended input voltage tolerance is the allowable range of the instantaneous input signals.

4. Optical Characteristics

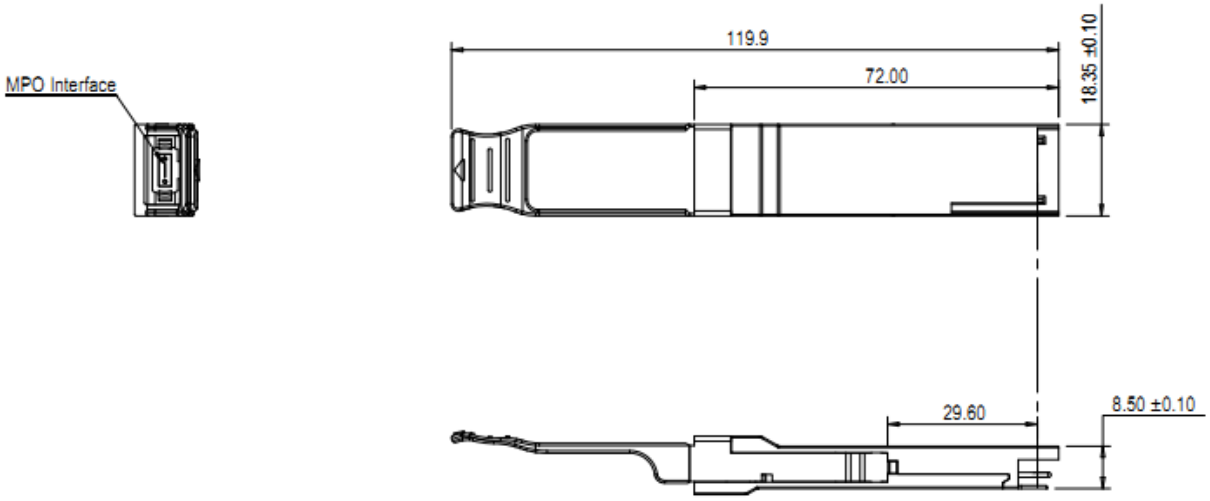
Parameter	Symbol	Min	Typ	Max	Units	Notes
Transmitter						
Center Wavelength	λC	840	850	860	nm	
RMS Spectral Width	Δλrms			0.6	nm	
Average Launch Power, each Lane	PAVG	-8.4		2.4	dBm	
Optical Modulation Amplitude (OMA), each Lane	POMA		-6.4	3.0	dBm	1
Difference in Launch Power between any Two Lanes (OMA)	Ptx,diff			4.0	dB	
Launch Power in OMA minus TDEC, each Lane		-7.3			dBm	
Transmitter and Dispersion Eye Closure (TDEC), each Lane				4.3	dB	
Extinction Ratio	ER	2.0			dB	
Optical Return Loss Tolerance	TOL			12	dB	
Encircled Flux		≥ 86% at 19um ≤ 30% at 4.5um				
Transmitter Eye Mask Definition {X1, X2, X3, Y1, Y2, Y3}, 5×10−5 hits/sample		{0.3,0.38,0.45,0.35,0.41,0.5}				2
Average Launch Power OFF Transmitter, each Lane	Poff			-30	dBm	
Receiver						
Center Wavelength	λC	840	850	860	nm	
Damage Threshold, each Lane	THd	3.4			dBm	3
Average Receive Power, each Lane		-10.3		2.4	dBm	
Receiver Reflectance	RR			-12	dB	
Receive Power (OMA), each Lane				3.0	dBm	
Receiver Sensitivity (OMA), each Lane	SEN			-9.2	dBm	
Stressed Receiver Sensitivity (OMA), each Lane				-5.2	dBm	4
LOS Assert	LOSA	-30			dBm	
LOS Deassert	LOSD			-12	dBm	
LOS Hysteresis	LOSH	0.5			dB	

Conditions of Stress Receiver Sensitivity Test (Note 5):						
Stressed Eye Closure (SEC), Lane under Test				4.3		dB
Stressed Eye J2 Jitter, Lane under Test				0.39		UI
Stressed Eye J4 Jitter, Lane under Test					0.53	UI
OMA of each Aggressor Lane			3		dBm	
Stressed receiver eye mask definition {X1, X2, X3, Y1, Y2, Y3}		{0.28,0.5,0.5,0.33,0.33,0.4}				

Notes:

1. Even if the TDP < 0.9 dB, the OMA min must exceed the minimum value specified here.
2. See Figure 5 below.
3. The receiver shall be able to tolerate, without damage, continuous exposure to a modulated optical input signal having this power level on one lane. The receiver does not have to operate correctly at this input power.
4. Measured with conformance test signal at receiver input for BER = $1x10^{-12}$.
5. Stressed eye closure and stressed eye jitter are test conditions for measuring stressed receiver sensitivity. They are not characteristics of the receiver.

5. Mechanical Diagram



Note: External physical characteristics are subject to variation. This may include, but is not limited to, external case designs, pull tab colors and/or shapes, removal latch styles or colors, and label sizes and placement. These variations do not affect the function or characteristics of the transceivers.

6. Ordering Information

OEM	Part Number	OEM	Part Number
Adtran	1445510F1C-A	HP	845966-B21-A
Agema	QSFP-100GA4BDR-A	HP	JL309A-A
Alcatel	3HE11275AA-A	Huawei	QSFP28-100G-SR4-A
Allied Telesis	AT-QSFP28-SR4-A	Infinera	TOM-100G-Q-SR4-A
Arista	QSFP-100G-SR4-A	Infinera	TOM-100GMR-Q-SR4-A
Arista	100GEQ-SR4-ARI	Ixia	QSFP28-SR4-XCVR-A
Avago	AFBR-89CDDZ-A	Ixia	IXIQSFP28-SR4-XCVR-A
Brocade	100G-QSFP28-SR4-A	Juniper	JNP-QSFP-100G-SR4-A
Calix	100-04650-A	Juniper	QSFP-100GBASE-SR4-A
Check Point	CPAC-TR-100SR-A	Juniper	QSFP-100G-SR4-T2-A
Chelsio	SM100G-SR-A	Juniper	JNP-QSFP-100G-SR4-C1
Ciena	160-9400-900-A	Lenovo	7G17A03539-A
Cisco	QSFP-100G-SR4-S-A	Mellanox	MMA1B00-C100D-A
Cisco	QSFP-100G-SR4-S-C1	Meraki	MA-QSFP-100G-SR4-A
Commercial	10401-A	MRV	QSFP28-100GE-SR4-A
Dell	Q28-100G-SR4-A	MSA	AN-QSFP28-SR4
Dell	407-BBSM-A	MSA Champion ONE	100GQSFP28E-SR4
Dell	407-BBWV-A	MSA Champion ONE	100GQSFP28E-SR4-TAA
Edgecore	ET7402-SR4-A	MSA OnePort	OP-QSFP28-SR4
Extreme	AA1405005-E6-A	Nokia	3HE10551AA-A
F5 Networks	F5-UPG-QSFP28-SR4-A	Nokia	3HE10551AA-C1
Finisar	FTLC9551REPM-A	Noviflow	400000511-A
Finisar	FTLC9558REPM-A	Optelian	1029-3600-A
Fortinet	FG-TRAN-QSFP28-SR4-C1	Palo Alto	PAN-QSFP28-100GBASE-SR4-A
Fortinet	FG-TRAN-QSFP28-SR4-A	Plexxi	PX-CBL-QSFP28-SR4-100M-A
Gigamon	Q28-502-A	Ruckus Wireless	E100G-QSFP28-SR4-A
H3C	QSFP-100G-SR4-MM850-A	Source Photonics	SPQ-CE-SR-CDFA-A
HP	JL274A-A	Transition Networks	TN-QSFP-100G-SR4-A

7. Contact Information

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